CHAPTER 3

STRUCTURES

3-1. General. The basic objective in the planning, design, construction, and maintenance of comfort stations, camper washhouses, shelters and other buildings in recreational areas is to provide adequate facilities for the use and support of the visiting public. The structures should be identifiable, convenient, and economical to construct and maintain. The structures should be attractive but not the focal point of the public recreational experience. Design factors should include, but are not limited to:

a. Building shapes and forms should be sensitive and complementary to the natural environment in which they are sited and they should be reflective of the character and style of other major structures in the vicinity.

b. Building and landscape designs shall reinforce each other in achieving compatibility with the environment through the use of forms, pattern, textures, colors, and materials. The building and landscape should complement the site, blending rather than contrasting, using natural forms and materials rather than artifical to present a uniform design statement of quality aesthetics.

c. Building materials, finishes, and systems selection should reflect those which may be procured, constructed, and maintained at a reasonable cost. Selections should consider the quality requirement of the work force, the inefficiency of a remote construction site, and replacement costs. The structures will be planned for a 25-year life. Actual design of site specific structures will require a 25-year life-cycle cost analysis of major materials and systems which will consider first costs and maintenance costs.

d. Buildings should be functional and energy efficient, utilizing natural lighting and ventilation without undue compromise to public health, security, and privacy standards.

e. Pre-engineered, prefabricated or pre-cut structures may be considered in lieu of individually designed structures. However, prior to proceeding with design, a 25-year life-cycle cost analysis shall be performed on the two types of construction including a determination of the impact on aesthetic/climatic environmental values and maintenance requirements.

3-2. Appendixes. Appendix C contains definitive floor plans of certain structures addressed in this chapter. The floor plans are considered conceptual standards for Corps-wide use. Building sizes may vary to suit

specific project requirements. For example, the number of toilet fixtures may increase or decrease, the width of the pipe chase may vary with specific mechanical equipment requirements and shelter sizes may vary with the number of tables covered. Floor plan concepts will, however, remain constant unless exceptionally small or large buildings are required which would give undesirable aesthetic proportions to the building design. In such cases requiring a change, a waiver from higher authority is required. New design concepts, aesthetic features, and environmental themes shall be compatible with the intent of the standards provided herein. Four different architectural themes are shown for each floor plan. Their use is not mandatory but serve as examples of achieving compatibility in various climatic environments. Appendix D contains suggested construction materials and details of accepted practice.

3-3. Sanitary Facilities. These structures provide toilet facilities for the visiting public. They are normally free-standing and sited in an unobtrusive but convenient location in day-use, camping, and boat ramp areas. User safety should be considered in siting these structures in order to minimize the need for the user to cross roads. Design guidance contained in this chapter is relative to functional floor plan. Types of toilets such as pit, vault, waterborne or composting are considered as methods of disposal and are not discussed in this chapter. The total number of plumbing fixtures to be provided in a recreation area is to be based on the average weekend day, 10-hour visitation during the prime recreational season at the specific site (see EM 1110-2-501, Part 2). In addition to the number and type of plumbing fixtures indicated for the various sanitary facilities, a single unisex toilet room shall be provided. The unisex toilet is to provide facilities for the handicapped and for nonhandicapped persons who may require assistance from a person of the opposite sex, i.e., father-daughter, mother-son, or disoriented spouse. One water closet and one lavatory shall be provided in comfort stations. One water closet, one lavatory, and one showerhead shall be provided in each washhouse and bathhouse. All fixtures in unisex toilets shall be barrier free. One drinking fountain should be provided on the exterior of each sanitary facility or in the near vicinity. The drinking fountain should be accessible to the handicapped. The fountain should not be located in the immediate vicinity of exterior lighting because of insect attraction. A utility sink may be provided in a storage room or pipe chase area. Hose bibbs with removable handles should be provided in each toilet area.

a. Comfort Station. A comfort station should be sited and sized to provide facilities for the majority of users inside a 600-foot radius. This distance is optimum and may vary where local codes or site conditions require a larger or smaller radius. For example, if the recreational site is linear, the travel distance to a comfort station should be increased rather than providing an additional structure. The following plumbing fixture allowance indicates the approximate number of persons per fixture:

	Water closet	Lavatory	Urinal
Men	250	330	200
Women	100	250	0

b. Camper Washhouse. These structures provide toilet and shower facilities in camping areas where visitors will spend one or more day/nights. Optimum siting parameters are the same as for comfort stations.

The following plumbing fixture allowance indicates the approximate number of persons per fixture:

	Water closet	Lavatory	Urinal	Showerheads
Men	250	200	200	100
Women	100	200	0	100

A laundry room may be provided and equipped with coin/token operated clothes washer (1) and clothes dryer (1). A built-in counter for folding/sorting clothes may be provided. The laundry room should have its own access and not be directly accessible from either of the toilet/shower areas. In extreme conditions comfort stations may be used in conjunction with washhouse structures in a common camping area. This may be necessary in order to provide convenient toilet-only facilities. In this event, the total number of showerheads would remain constant while the total number of water closets, lavatories, and urinals in the area may increase in order to be convenient to the users.

c. Bathhouses. These structures provide toilets, shower, and clothes changing areas in support of swimming areas. Facilities for the handicapped are to be provided regardless of whether the beach is accessible to the handicapped. In addition to the functional areas mentioned above, a small private room may be provided which serves as a small storage room, first aid area, and personal use of the staff. Basket storage, concessions, or office areas are not provided unless requested and funded by the cost-sharing sponsor. An enclosed shower area is optional. Free-standing shower facilities should be provided outside the bathhouse structure for sand removal. The following plumbing fixture allowance indicates the approximate number of persons per fixture:

	Water closet	Lavatory	Urinal	Showerhead	Change Rooms
Men	330	330	200	200	200
Women	175	330	0	200	200

3-4. Water Supply/Pump House. The structures are normally free-standing and located at the well head. Consideration may be given to locating the equipment within a pipe chase area of a comfort station or washhouse structure. The advantage of this location is to reduce vandalism and the cost of the pump house construction. If included within a toilet facility, any modification to provide additional space for the equipment should be compared to the cost of a separate building. Care must be taken to ensure that state and local health requirements are met regarding the separation of water supply and sanitary disposal facilities. Whether free-standing or included within another building, attention must be given to maintenance access, particularly the ability to remove and replace items such as well pumps and piping. If a free-standing pump house must be provided, the architectural treatment should be consistent with other structures in the area. Interior finish should be minimal since these structures are not for public use. The pump house may be a pit type structure where aesthetics or freeze protection are an issue. Where large water storage tanks are required, adequate visual screening should be provided.

3-5. Shelters. These structures provide the visiting public protection from the elements. Shelters are normally sited in day use areas, but may, with limited application, be sited in campgrounds.

a. Individual Units. These shelters may be provided in areas where tree cover is minimal or where protection from inclement weather is essential. Their sizes may vary from that required to shelter a single picnic table in a picnic area to that required to shelter several tables. The provision of sidewalls is discretionary and is dependent on protection requirements, prevailing winds, and scenic views. In the selection of material for the impact area, consideration should be given to existing soil conditions, granular material, or hard surface.

b. Group Shelters. These shelters provide an assembly area for visitor group activities such as picnics, meetings and/or interpretative programs. Sidewalls are not usually provided; however, one or more walls may be constructed if required by site conditions. Group shelters should be handicapped accessible and sized for 4 to 12 six-person picnic tables with adequate circulation space between tables. The floor should be a smooth, hard surfaced material, such as brushed concrete. Cooking facilities such as a fireplace or adjustable charcoal grills may be provided. They may be integral with the shelter or provided as free-standing units adjacent to the shelter. If free-standing, the direction of prevailing breezes is to be considered for smoke control. Water, lighting, power outlets, and trash receptacles should be provided. Design of the roof structural system should consider use of post and beams rather than trusses or rafters, to reduce the occurrence of bird roosts and the attraction of undesirable insects and other pests.

3-6. Overlooks. Overlook structures, with or without a roof, may be provided in locations to maximize the enjoyment of the area by the visiting public. They are accessed by road, walkways, or trails. Appropriate parking for cars and buses should be provided when justified by the number of expected visitors. Overlooks should be accessible to the handicapped, the elderly, and the young. However, if accessibility is economically prohibited due to site conditions or the configuration of the overlook, such as a tower, consideration should be given to the development of an additional overlook which will provide an optimum view but would allow handicapped, elderly, and young an opportunity to participate. The observation area should provide seating and a hard surfaced deck material. A comfort station and/or drinking fountain may also be provided if justified by the visitation.

3-7. Entrance Stations. These structures are small buildings, located within or adjacent to the entrance/exit roadways to camping areas or day-use areas. They may be occupied by one or two persons whose basic functions are to assist visitors, assign camp sites, and/or collect user fees. Windows and doors in these structures should afford the occupant a view of both incoming and outgoing traffic. A pass window on each side should be provided to enable the occupant to transact business without leaving the station. Security considerations must be given to the safekeeping of the collected fees. These considerations include, but are not limited to, a counter with cash drawer, a secured vault or safe, adjustable shades or blinds to obscure the occupant when money is being counted. A small private toilet may be provided if required by site conditions. The structures should be heated and/or air-conditioned according to climate conditions. Control stations may be permanent structures or temporary buildings mounted on skids. If a physical barrier is required, special design features such as plantings, water courses, or changes in elevation should be used to avoid a fenced in condition. The layout of the actual entrance station itself should also be given special design consideration to prevent the commercial look. It should also be designed and located with the movement of visitors as a primary factor. Power, telephone, and restroom facilities should be provided.

3-8. Fish Cleaning Stations. These structures are free-standing buildings which may be provided in areas of concentrated fishing. Site orientation should consider prevailing wind direction. They are normally roofed structures which are open on two or more sides, however; they may be fully enclosed by screening where conditions warrant. An impervious scaling and cleaning table is to be provided with a metal or (polyvinyl chloride) (PVC) trough to collect the waste. Water faucets, electric lighting, and fish grinders may be provided. Waste is usually contained in an underground holding tank.

3-9. Visitor Centers. Visitor centers are provided to disseminate project related information to the visiting public. Information presented should

help the visitor enjoy the project facilities and its benefits and understand the role of the Corps of Engineers. When a visitor center is not provided, a portion of the project office may be used as an information center. The size, scope, and complexity of visitor facilities will vary, but all share the basic objectives of accommodating and informing the visiting public (see ER 1130-2-401).